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10/693,853

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Steven M. Arnold

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NASA GLENN RESEARCH CENTER

21000 BROOKPARK ROAD

OFFICE OF CHIEF COUNSEL; MAIL STOP 500-118

CLEVELAND, OH 44135

EXAMINER

NGUYEN, XUAN LAN T

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* STEVEN M. ARNOLD and NICHOLAS PENNEY

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Appeal 2007-0443  
Application 10/693,853  
Technology Center 3600

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Decided: February 27, 2008

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Before TERRY J. OWENS, MURRIEL E. CRAWFORD, and  
JENNIFER D. BAHR, *Administrative Patent Judges*.

CRAWFORD, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134 (2002) from a final rejection of claims 1 to 3, 6 to 11 and 15. We have jurisdiction under 35 U.S.C. § 6(b) (2002).

Appellants invented a magnetorheological device having a coil surrounding a portion of a passageway interconnecting a first and second

chamber. The coil enables the viscosity of a magnetorheological fluid residing in the first and second chambers to be varied (Specification 1).

Claim 1 under appeal reads as follows:

1. A magnetorheological device comprising:

a generally cylindrically shaped housing having cylindrical walls and a divider within said housing;

said housing includes an integral end portion and an end plate removably attached to said cylindrically shaped housing;

a rotary impeller having two paddles mounted within said housing; said rotary impeller sealingly engaging said divider;

said paddles in combination with said cylindrical walls, said divider, said integral end portion of said housing, and said end plate of said housing form a first chamber and a second chamber;

a magnetorheological fluid residing in said chambers;

a passageway interconnecting said first and second chambers; and,

a coil surrounding a portion of said passageway enabling the viscosity of the magnetorheological fluid to be varied.

The Examiner rejected claims 1 to 3, 6 to 11 and 15 under 35 U.S.C. § 103(a) as being unpatentable over Park in view of Johnston and Rosaen.

The prior art relied upon by the Examiner in rejecting the claims on appeal are:

Rosaen	US 3,448,751	June 10, 1969
Park	US 6,095,295	Aug. 1, 2000
Johnston	US 6,318,522	Nov. 20, 2001

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## OPINION

We have carefully reviewed the rejections on appeal in light of the arguments of the Appellants and the Examiner. As a result of this review, we have reached the conclusion that the applied prior art does not establish the prima facie obviousness of the claimed subject matter. Therefore the rejections on appeal will not be sustained. Our reasons follow.

The following comprise our finding of facts with respect to the scope and content of the prior art and the differences between the prior art and the claimed subject matter.

Park discloses a magnetorheological device which includes a generally cylindrically shaped housing and a first chamber 116 and a second chamber 116A (Figure 2). Fluid flows from one chamber to the other through holes 128, 129, cylindrical space 126, 127 and annular space 125 (col. 3, ll. 52 to 58). A coil 122 is disposed in a hollow in the annular body 121 (col. 3, ll. 17 to 20). When an electric current is passed through the coil 122, the annular body 121 and thus the annular space 125 is magnetized thereby increasing the viscosity of the magnetorheological fluid (col. 3, ll. 21 to 24; col. 3, ll. 66 to col. 4, l 2). The increase in the viscosity of the magnetorheological fluid is operable to increase the force applied to paddle or wing 112 and thereby adjust the damping of the torque of damping shaft 111 (col. 4, ll. 6 to 11; Figure 2). The magnetic flux lines are disposed perpendicular to the flow of fluid through the annular space 125 as the two ends 123 and 124 act like magnetic poles having opposed polarities (col. 3, ll. 25 to 28).

Rosaen discloses a pressure control device which utilizes a pump 12 to deliver fluid to a user 14 (Figure 1). The pressure of the fluid delivered to the user depends on the pressure being produced by the pump 12 and the fluid permitted to return to the reservoir through a bypass conduit 18 (col. 2, ll. 45 to 49). When fluid is prevented from flowing to the bypass conduit 18, fluid delivered to the user is delivered at substantially pump pressure so that the pressure of the fluid delivered to the user can be controlled by controlling the flow of fluid to the bypass conduit 18 (col. 2, ll. 49 to 53). Flow through the bypass conduit 18 can be prevented by energizing an electromagnetic coil wrapped around the bypass conduit 18 as depicted in Figure 1 (col. 2, ll. 54 to col. 4, l. 13). Therefore, by controlling the magnetic field produced by the coil 20, the pressure of the fluid delivered to the user can be controlled. The magnetic flux lines are disposed parallel to the direction of flow of the fluid (Figure 2).

The disagreement between the Appellants and the Examiner is with respect to the combination of the teachings of Park and Rosaen. The Examiner reasons that a person of ordinary skill in the art would have been motivated to modify the Park device so as to include a coil surrounding the passageway 125 because such an arrangement would be a more effective way of varying the viscosity of the fluid.<sup>1</sup> The Appellants contend that a person of ordinary skill in the art would have no reason to combine the

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<sup>1</sup> The Examiner relies on Johnson for teaching two paddles rather than one paddle.

teachings of Park and Rosaen and that such a modification would result in a total redesign of the Rosaen device..

We agree with the Appellants. Firstly, it is not clear how one of ordinary skill in the art would modify the Park device so as to include the feature of wrapping a coil around the annular passage 125. It appears, as Appellants argue, that the Park device would have to be totally redesigned to result in a coil surrounding the annular passageway 125 as the coil 122 is buried in the annular body 121 below seal 138. It is not even clear how one would accomplish such a redesign.

Secondly, it is not clear how the teachings of Rosaen could be utilized in the Park device because the magnetic flux lines of the magnetic field produced by the coil in Park which surrounds the bypass circuit 18 are disposed parallel to the flow of the fluid and the magnetic flux lines in the Rosaen device are disposed perpendicular to flow of the fluid.

Lastly, we find no factual basis for the Examiner's assertion that having a coil wrapped around the Park passageway 125 would be a more effective way of varying the viscosity of the fluid and therefore we find no reason to modify the Rosaen device so as to include a coil wrapped around passageway 125.

The decision of the Examiner is reversed.

REVERSED

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